

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of separating unwanted lightweight grains from raw grains using a vertical cylinder having, in order from the top, an exhaust port, a cylindrical primary separation space, a conical secondary separation space, a tertiary separation space, and an unloading port, comprising:

a primary separation step of introducing raw grains containing the lightweight grains, which are to be separated, together with primary air into the cylindrical primary separation space in a direction to allow the raw grains to whirl upward in a whirling motion along an inner wall surface of the cylindrical primary separation space, so that most of the lightweight grains contained in the raw grains are guided to the exhaust port by upwardly flowing air in the cylindrical primary separation space and the raw grains and part of the lightweight grains stay in a predetermined flow area by frictional resistance with respect to the inner wall surface generated by the whirling motion and then are dropped into the conical secondary separation space by their own weight;

a secondary separation step of blowing secondary air to a lower portion of the conical secondary separation space through a slit toward an upwardly beveled surface of a stabilizer provided centrally in the lower portion of the conical secondary separation space, and toward the raw grains dropping into the conical secondary separation space from the primary separation step so as to blow lightweight grains in the raw grains upward to the cylindrical primary separation space;

a tertiary separation step of blowing tertiary air upward from below the conical secondary separation space to blow remaining lightweight grains to the conical secondary separation space;

a discharging step of taking the raw grains with the lightweight grains removed

continuously out from the unloading port provided below the conical secondary separation space;
and

an exhaust step of continuously exhausting primary, secondary, and tertiary air having the lightweight grains toward a horizontal ~~opposite~~ tangential direction ~~to the whirling direction of the raw grains in the cylindrical primary separation space~~ from an upper portion of the primary separation space.

2. (Cancelled)

3. (Currently Amended) A device for separating unwanted lightweight grains from raw grains, comprising:

a cylindrical section ~~having~~ comprising a peripheral wall defining an exhaust port tangential to an inner peripheral wall of the cylinder at an upper portion thereof;

a conical section provided below the cylindrical section;

a raw grain feeding unit for feeding raw grains together with primary air into the cylindrical section to whirl the raw grains upward along an inner periphery of the cylindrical section above the conical section;

a lightweight grain separating unit for taking air having the lightweight grains in the raw grains out from the upper portion of the cylindrical section ~~against the whirling direction of the raw grains~~ through the exhaust port, the lightweight grain separating unit extending horizontally and tangentially from the exhaust port;

a secondary air blowing unit for blowing the secondary air toward the raw grains being dropped from the cylindrical section upward at a lower portion of the conical section to move fine grains upward to the cylindrical section wherein the secondary air blowing unit blows a high-speed fresh secondary airflow into a chamber that surrounds a slit formed between an upwardly beveled surface of a stabilizer and a lower end of the conical section; and

a tertiary air blowing unit blowing tertiary fresh air upward from below the conical section into a chamber bounded by the stabilizer and a unit for discharging separated heavier raw grains away from the stabilizer.

4. (Cancelled)

5. (Original) A device according to Claim 3, wherein the secondary air blowing unit comprises a secondary air intake chamber connected via a slit provided at the lower end of the conical section for taking compressed air therefrom.

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Currently Amended) A device for separating unwanted powder bodies from grains comprising:

a cylindrical section forming a primary separation space, the cylindrical section comprising a peripheral wall having an opening; ~~of a horizontal~~

an exhaust pipe extending horizontally and tangentially from the opening for discharging air ~~having~~ with the powder bodies at an upper portion thereof;

a conical section forming a secondary separation space provided on a downside of the cylindrical section;

a grain feeding unit for feeding grains together with primary air containing the powder bodies into the cylindrical section from a lower port of the cylindrical section so as to whirl in the cylindrical section in a direction along an inner periphery of the cylindrical section;

a secondary air blowing unit for blowing high-pressure air at a lower portion of the conical section from a circumferential slit on the conical section toward the grains containing the powder bodies being dropped from the cylindrical section on an upwardly beveled surface of a stabilizer to move the powder bodies upward to the cylindrical section;

a tertiary air blowing unit for blowing tertiary fresh air into a tertiary separation space provided below the secondary separation space; and

a unit for discharging the grains from under the tertiary separation space.

11. (Cancelled)

12. (Previously Presented) A device according to Claim 10, wherein the secondary air blowing unit has a secondary air intake chamber surrounding the slit that blows a high-speed secondary airflow through the slit toward an upwardly beveled surface of a stabilizer provided at a lower end of the conical section.

13. (New) The method of Claim 1, wherein in the primary separation step, the primary air is introduced into the cylindrical primary separation space in a tangential direction, and the exhaust port is arranged in an opposite direction to the tangential direction.

14. (New) The device according to Claim 3, wherein at least a portion of the upwardly beveled surface of the stabilizer is located below the slit.

15. (New) The device according to Claim 10, wherein at least a portion of the upwardly beveled surface of the stabilizer is located below the circumferential slit.